

WHAT WE CLAIM IS:

a3 11. A method for determining the thickness of at least one layer of a substrate that has geometric structures that lead to diffraction of light, including the steps of:

5 measuring at least one of the reflection and the transmission light intensity values of zero order of diffraction as a function of wavelength;

calculating the at least one of reflection and transmission light intensity values using an iteration model in which the individual layer parameters and the geometric dimensions of said geometric structures of said substrate are included as further parameters; and

10 modifying the parameters to effect correspondence between the measured and calculated values.

12. A method according to claim 11, wherein geometric dimensions of said geometric structures of said substrate are determined.

13. A method according to claim 11, wherein at least one of calculated data for layer thicknesses and for said geometric structures are used for regulating production processes for at least one of applying at least one layer to a substrate and for developing substrate structures.

14. A method according to claim 11, wherein the substrates are blanks for data storage media.

09831842-032101
FOR PAGES 24-25

a3
end

15. A method according to claim 14, wherein said geometric structures are channels in said blank.

16. A method according to claim 11, wherein at least one layer is an information-carrying layer.

5 17. A method according to claim 16, wherein said information-carrying layer is a metal alloy that is modifiable by energy from a beam of light between two phases.

18. A method according to claim 16, wherein said information-carrying layer is formed between two buffer layers.

10 19. A method according to claim 11, wherein optical data storage media are used during manufacturing.

05331842 082101

Patent claims

1. Method for determining the thickness of at least one layer provided on a substrate by measuring reflection and/or transmission light intensity values of zero order of diffraction as a function of the wavelength and by calculating the reflection and/or transmission light intensity values using an iteration model that depends on the individual layer parameters, whereby said layer parameters are modified to effect correspondence between the measured values and the calculated values, and whereby said substrates have geometric structures, the geometric dimensions of which are used as additional parameters of said iteration model.

2. Method in accordance with claim 1, characterized in that interferences that occur due to said geometric structures are used for additional parameters.

3. Method in accordance with claim 1 or 2, characterized in that the geometric dimensions of said structures are determined.

4. Method in accordance with any of the preceding claims, characterized in that the calculated data for the layer thicknesses (n) and/or geometric structures are used for regulating production

processes for applying at least one layer to a substrate and/or for developing substrate structures.

5. Method in accordance with any of the preceding claims,
5 characterized in that the substrates are blanks for data storage media.

6. Method in accordance with claim 5, characterized in that geometric
structures are embodied as channels in said blank.

7. Method in accordance with any of the preceding claims,
10 characterized in that at least one layer is an information-carrying layer.

8. Method in accordance with claim 7, characterized in that said
information-carrying layer is a metal alloy that can be modified by the
15 energy from a beam of light between two phases.

9. Method in accordance with claim 7 or 8, characterized in that said
information-carrying layer is embodied between two buffer layers.

10. Method in accordance with any of the preceding claims,
20 characterized by use during the manufacture of optical data storage
media.

add 937